



West Nile Virus Disease and Emerging Mosquito-borne Infections

Benjamin Schwartz, MD

Acute Communicable Disease Control Program

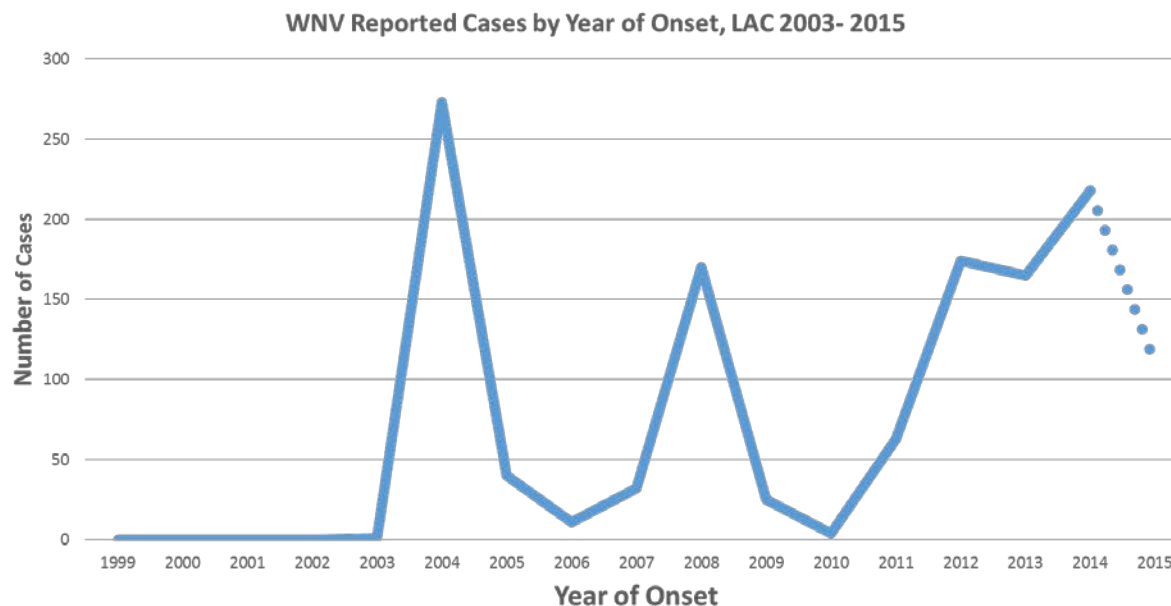
Los Angeles County Department of Public Health

October 27, 2015



West Nile Virus (WNV) in LAC: From Periodic Outbreaks to Annual Occurrence

- First introduced into the U.S. in 1999
- Carried by birds; transmitted to people by mosquitos
- Now, the most common mosquito-borne infection in the U.S.



2015 data through 10/22/15

Clinical Features of WNV Infection

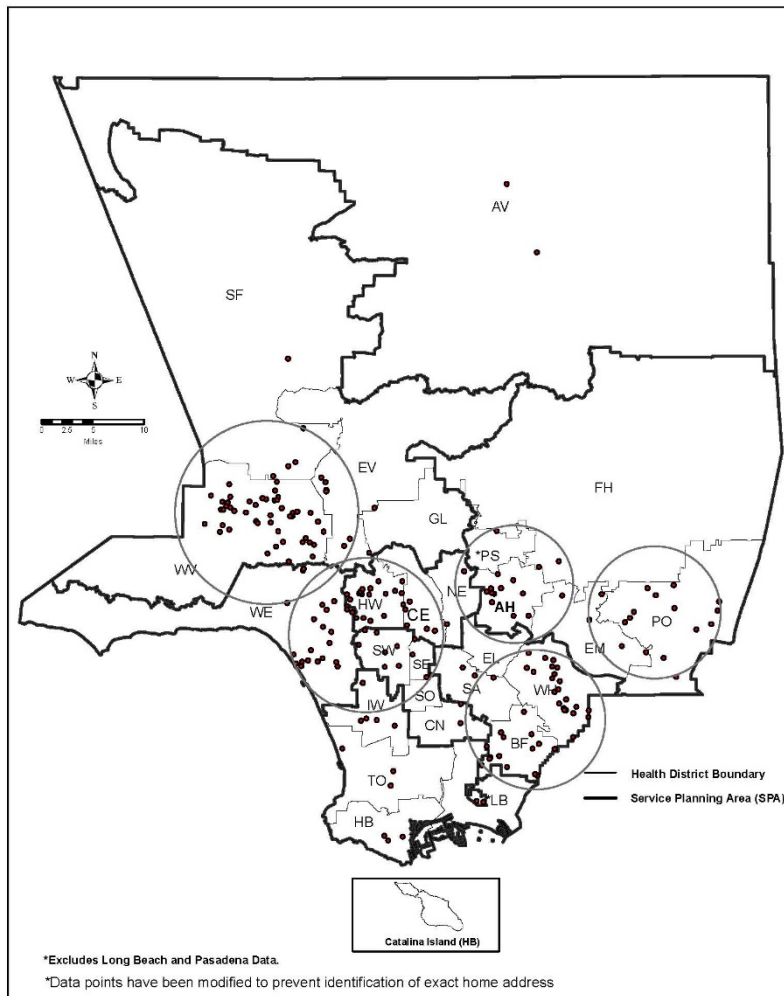
- Reported cases reflect severe end of disease spectrum
 - Meningitis, encephalitis, paralysis, death
 - For each severe case, there are an estimated 140 asymptomatic infections and 28 people with fever-only
- Severe illness mostly in elderly and persons with underlying disease
- No treatment

	2014	2015*
Fatalities	7	8
Paralysis	15	6
Encephalitis	67	32
Meningitis	74	50
Febrile Illness	43	10

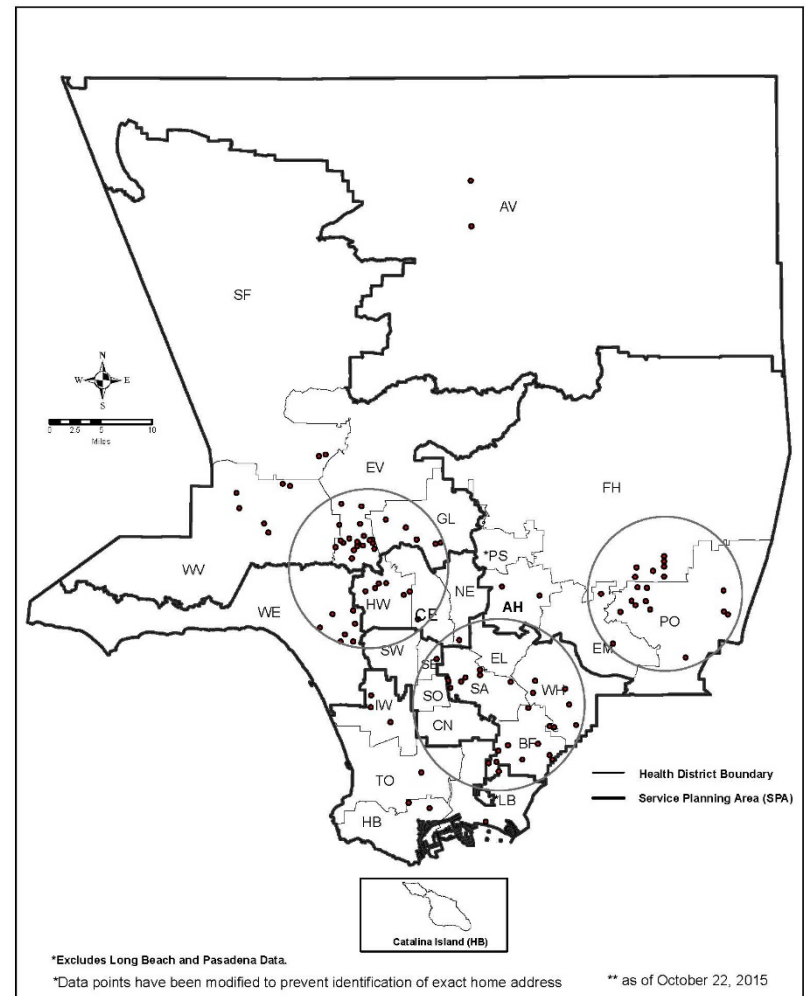


Location of High WNV Disease Cases in LAC

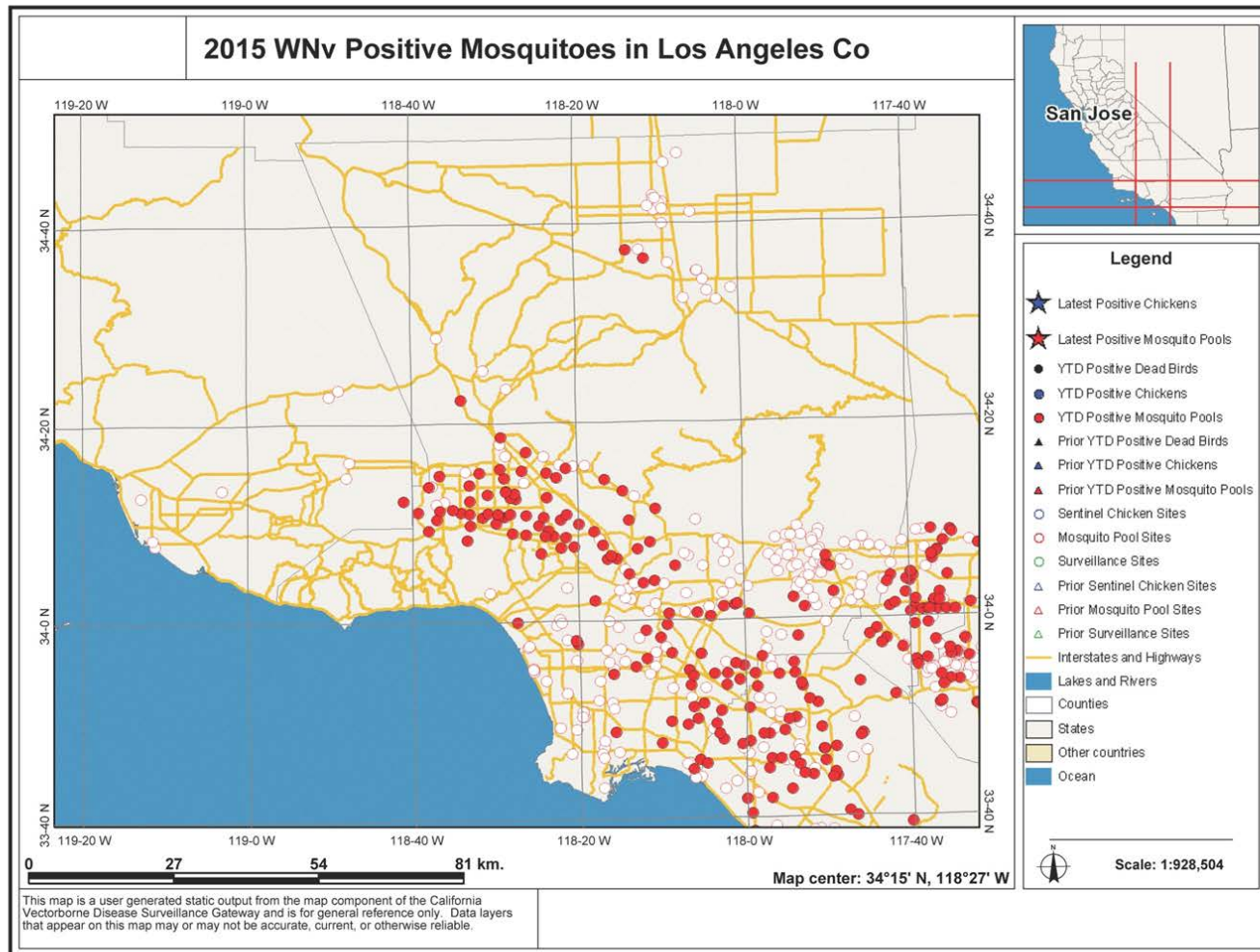
Closed-Confirmed West Nile Virus Case Reports
By Residence* LAC 2014 N= (218)



Closed-Confirmed West Nile Virus Case Reports
By Residence* LAC 2015 to Date** N= (110)



Location of WNV-Infected Mosquitos in LAC



WNV Prevention Strategies

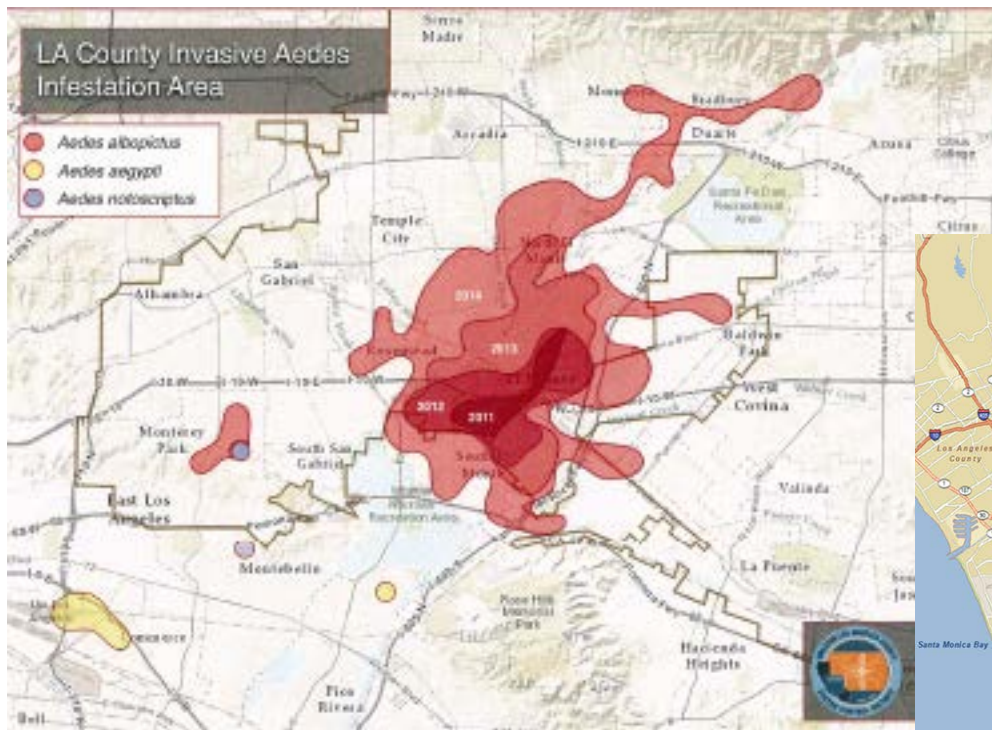
- Vector control
 - Elimination of breeding sites – standing water
 - Larvicides, pesticides
- Human behavior change
 - Protective clothing
 - Insect repellent
 - Keep mosquitos out of the house (screens)

Targeted Behavior Change Strategy

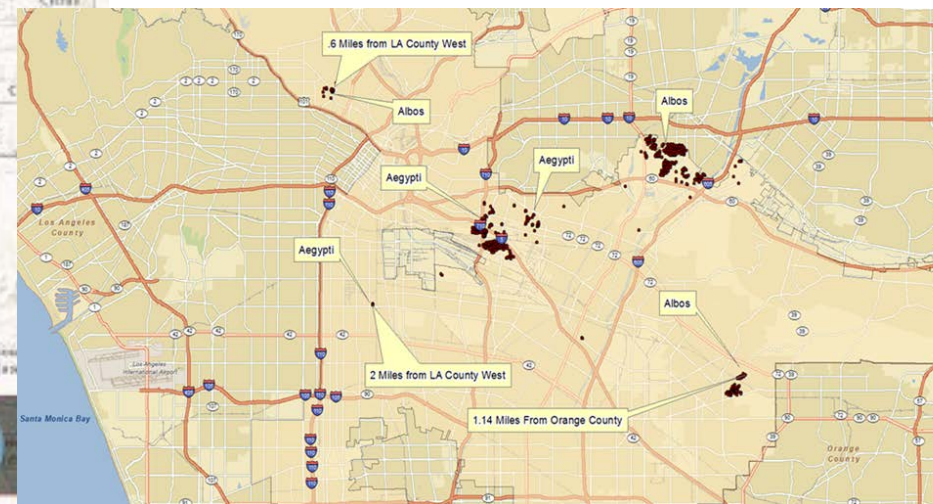
- **Risk group focus** – elderly, immunosuppressed
- **Geographic focus** – Cities with prior cases, areas with infected mosquitos
- **Time of day focus** – morning, evening

Emerging Concern: Aedes Mosquitos

- Aggressive day-biting mosquitos
- First found in El Monte in 2011
- Expanding range each year



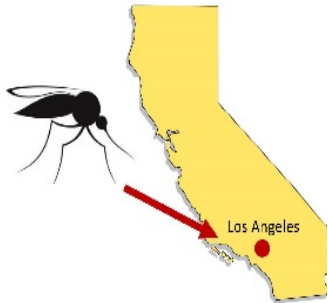
Asian Tiger Mosquito



Aedes Mosquitos and Tropical Diseases

- *Aedes* able to transmit dengue and Chikungunya
 - Currently 20-50 imported cases of each disease/year in LAC
 - No local transmission...yet
 - Four steps to local transmission – Vector Control and Public Health actions reduce risk at each step

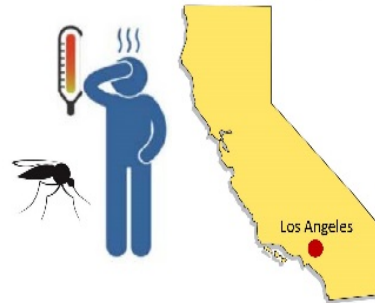
1. Vector found in LA



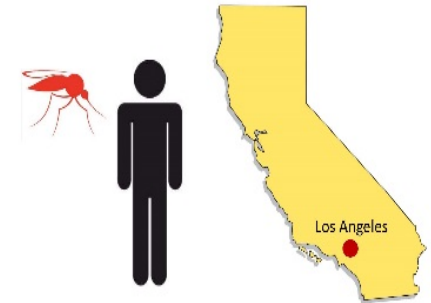
2. Infected person travels to LA



3. Vector bites infected person



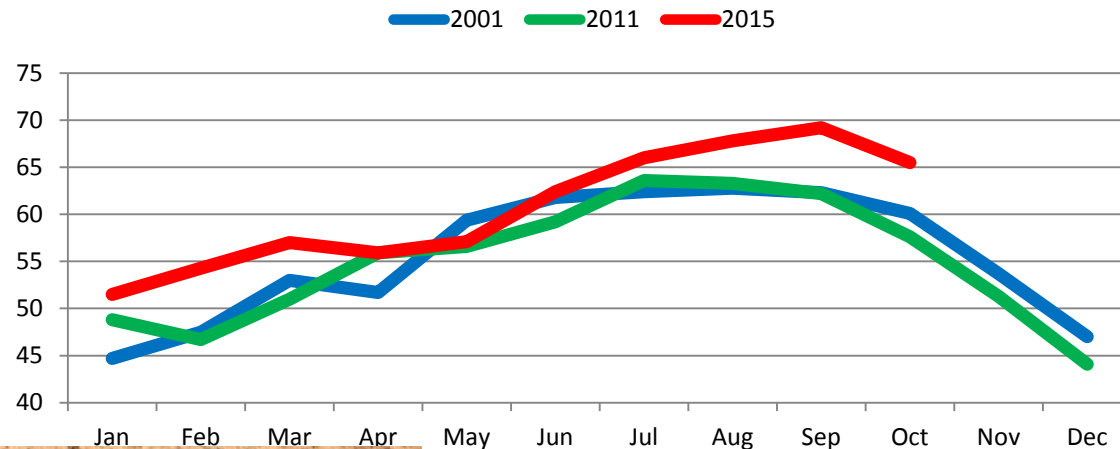
4. Infected vector bites another person



Predictions for 2016? Possible Impact of El Niño & Warmer Temperatures

More water & higher temperatures = Greater mosquito density & range

Monthly mean minimum temperature, Los Angeles Civic Center 2001, 2011, 2015



Aedes aegypti breeding in bottle caps

DPH Actions to Protect LAC Residents

- Surveillance
 - Tracking cases of infection
 - Diagnostic testing at the Public Health Laboratory
- Education and outreach
 - Weekly WNV Updates
 - Fact sheets & posters
 - Physician education
- Partnership
 - Data sharing with Vector Control
 - Coordinated communication and health education



West Nile Virus: 2015
Los Angeles County Epidemiology Report #9
October 22, 2015

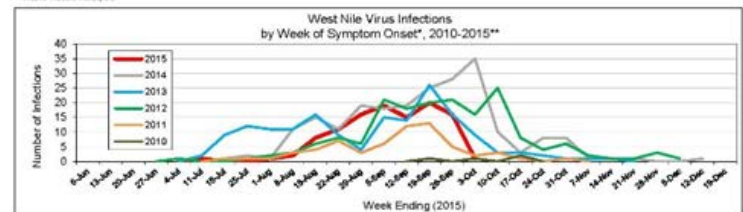


Beginning on October 22, the Los Angeles County (LAC) Department of Public Health will release the city of residence of new cases documented in the previous week within LAC. This week a total of 17 new WNV infections, all clinical cases, including 1 fatality has been documented this week (Table 1). The fatal case was an elderly resident of Reseda with previous medical conditions who fell ill with neuro-invasive disease in late August. The current cumulative total for 2015 is 110 infections (98 clinical cases and 12 asymptomatic infections), including 8 fatalities (Table 1). To date, 366 clinical human cases have been reported in 30 California counties. Nationally, 1,462 clinical cases have been reported in 42 states, with the most documented in California.

See <http://westnile.ca.gov/> and <http://www.cdc.gov/nceid/dvbid/westnile/> for details.

Number of Infections ¹	Asymptomatic Donor ²	Clinical Presentation				Hospitalized	Deaths	Demographics	
		WNV Fever	Neuroinvasive Disease	Neuroinvasive Diagnosis	Gender M/F			Median Age (Range)	
This Week	17	0	3	14	9 = Encephalitis 4 = Meningitis 1 = AFP ³	17	1	10/7	67 (43-89)
Year Total	110	12	10	68	32 = Encephalitis 50 = Meningitis 6 = AFP ³	95	8	72/38	60.5 (12-98)

¹Count as of Thursday, 10/22/15. Spm. Excludes reports from Long Beach and Pasadena. Totals are provisional and subject to change.
²Excludes non-donor asymptomatic infections.
³Acute Flaccid Paralysis.



*Symptoms also black and origin dates listed by date of diagnosis.
**Due to reporting lag, week-end reports may not be complete.

Table 2. WNV Infections by City of Residence
LAC, October 16-22, 2015¹

City	This Week ¹
Canoga Park	1
Culver City	1
Glendale	1
Huntington Park	2
La Mirada	1
Lakeview	1
Los Angeles	3
Maywood	1
North Hollywood	2
Norwalk	1
Reseda	1
San Fernando	1
Sherman Oaks	1
TOTAL	17

¹Thru 11/22/23, 5pm. Dark red text indicates Reseda. Totals are provisional and subject to change.

Weekly reports available at <http://publichealth.lacounty.gov/acdc/vector/westnile.htm> Acute Communicable Disease Control (213) 240-7941

What can you do to prevent WNV?

For residents of cities with new WNV infections, increase your efforts to prevent WNV!

- If outdoors from dusk to dawn, use Environmental Protection Agency (EPA) approved insect repellents and cover up: wear long sleeve shirts and pants.
- To help keep mosquitoes out of your home, make sure your door and window screens are in good condition.
- Dump and drain water from potted plants, pet water bowls, and bird baths at least every 3 days to prevent mosquito breeding.